FIG 1
(PRIOR ART)

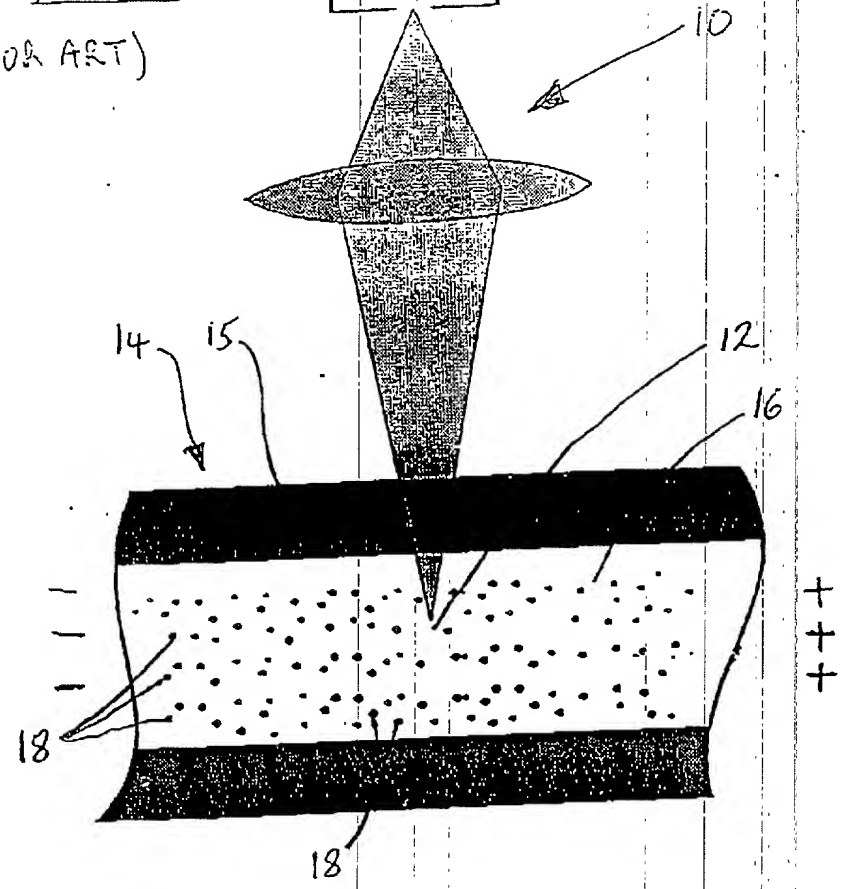


FIG 2
(PRIOR ART)

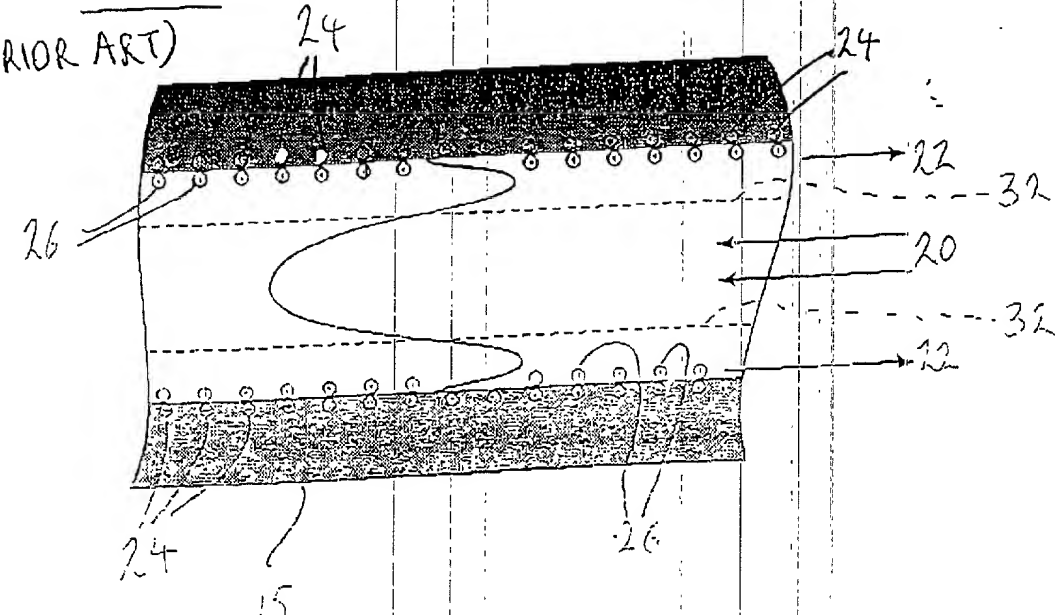
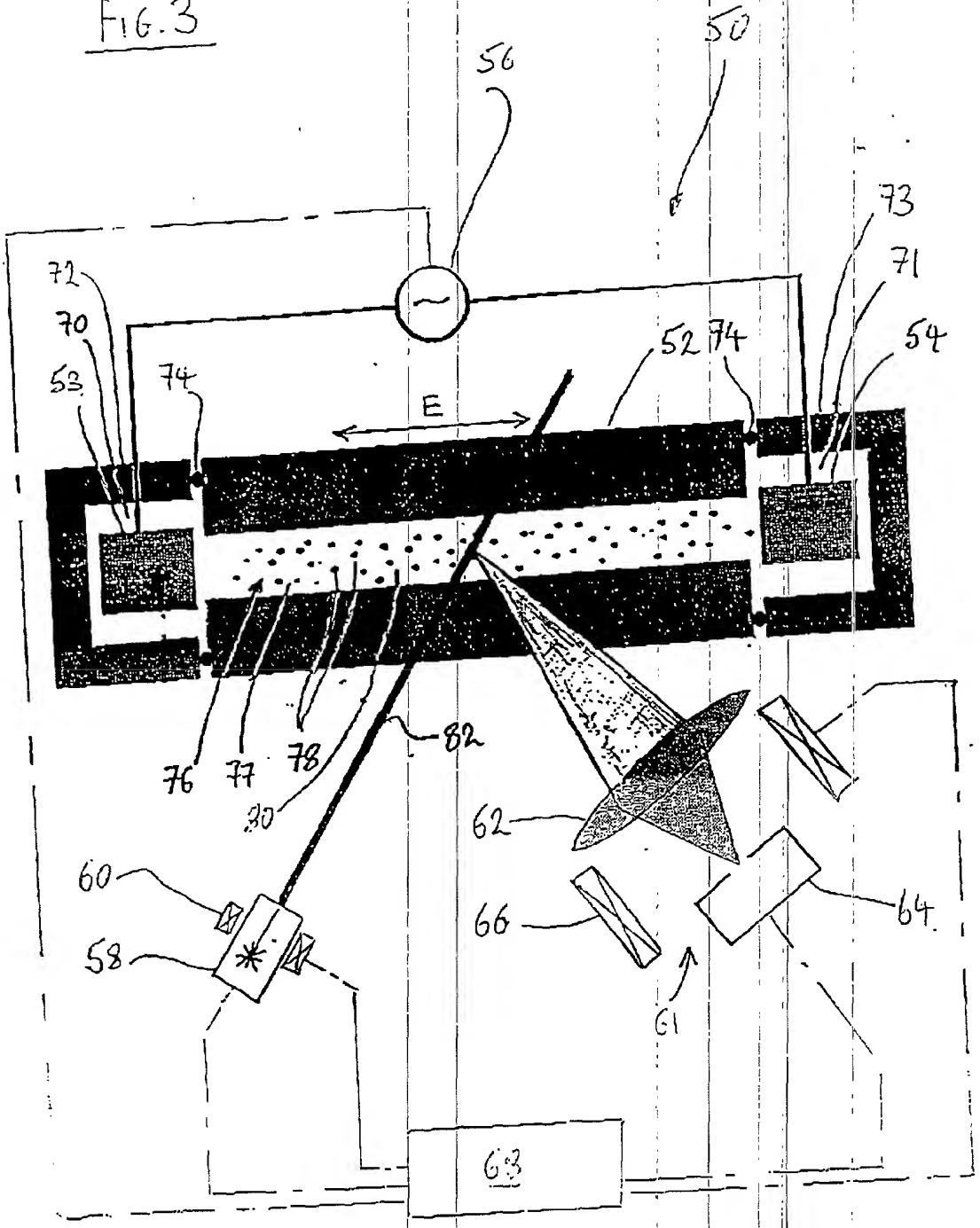


FIG. 3



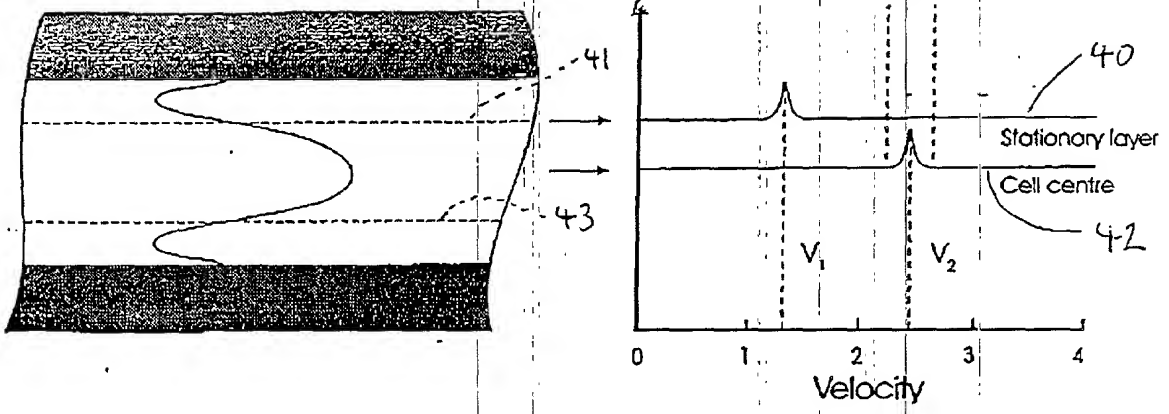

I
W1
41
40
Stationary layer
Cell centre
43
42
V1
V2
0
1
2
3
4
Velocity

FIG. 4

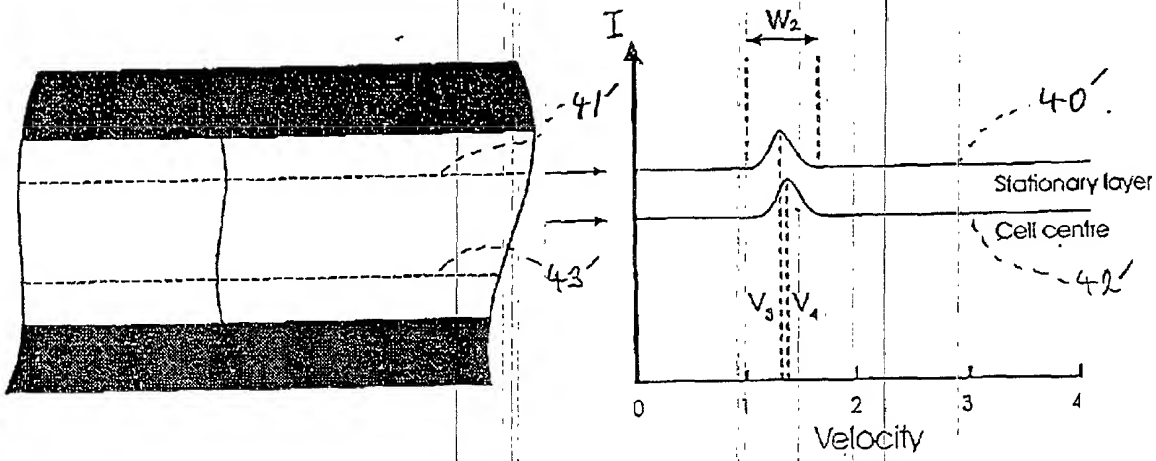

I
W2
41'
40'
Stationary layer
Cell centre
43'
42'
V3
V4
0
1
2
3
4
Velocity

FIG. 5

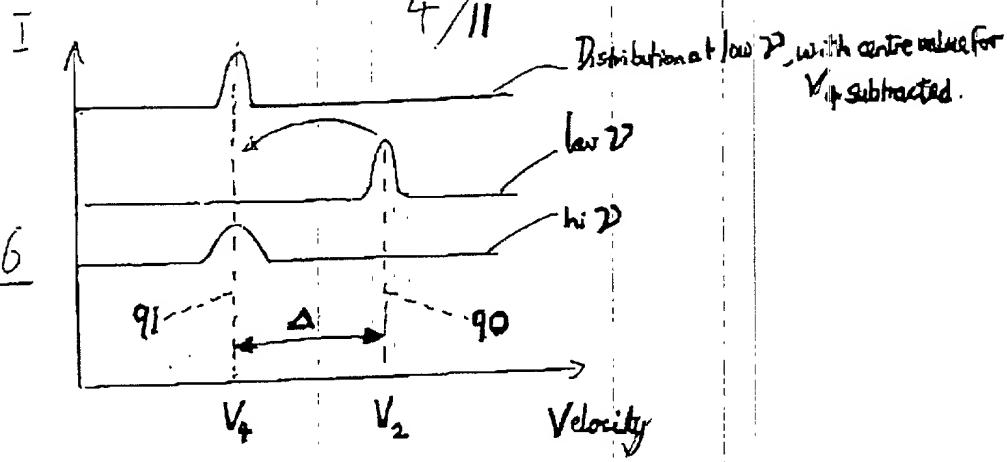


FIG. 6

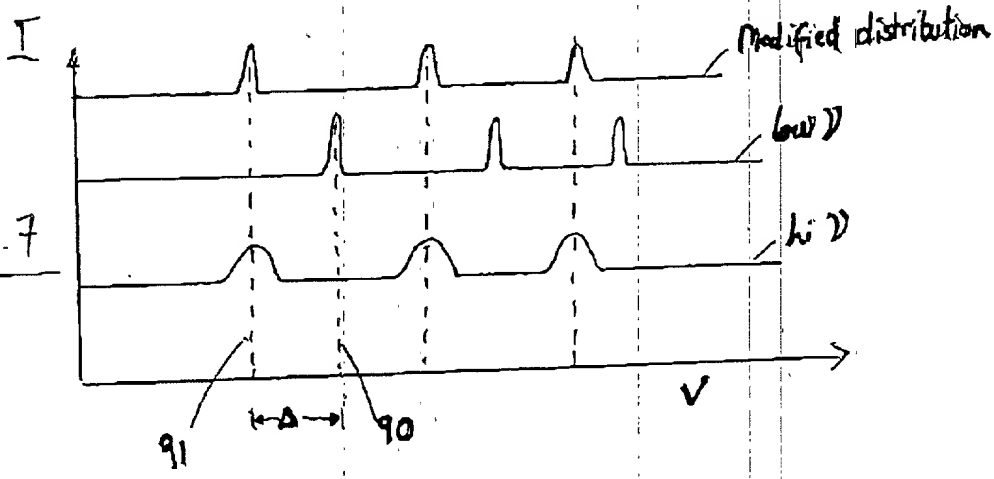


FIG. 7

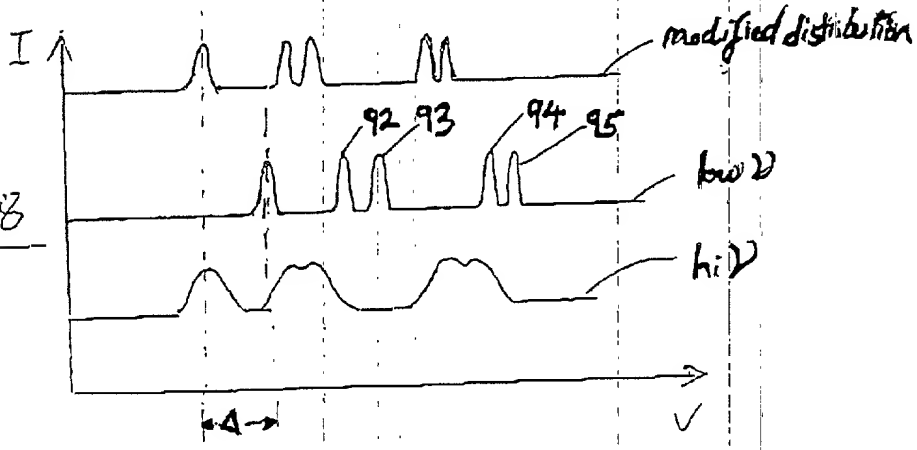


FIG. 8

FIG 10A

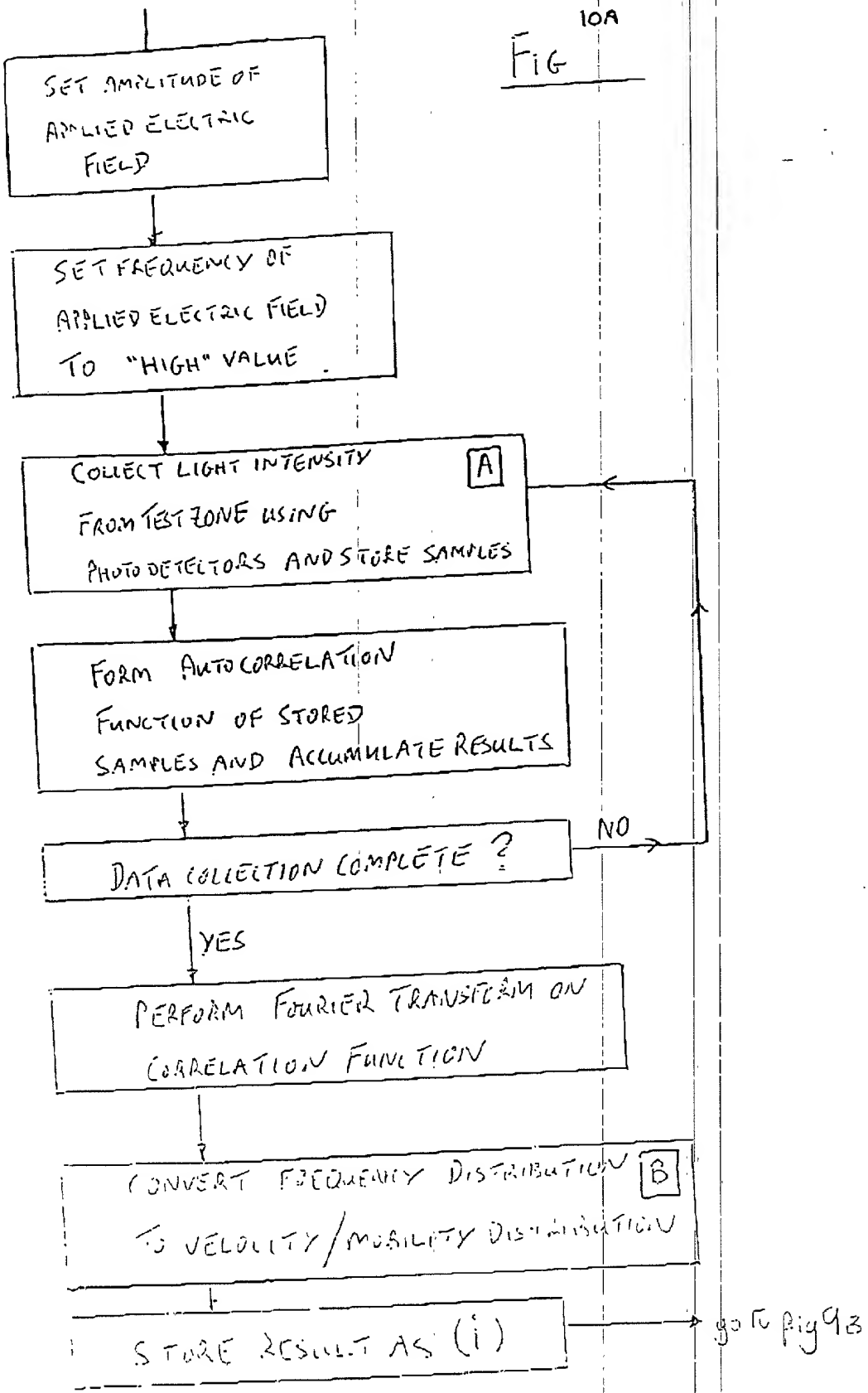

SET AMPLITUDE OF APPLIED ELECTRIC FIELD
SET FREQUENCY OF APPLIED ELECTRIC FIELD TO "HIGH" VALUE
COLLECT LIGHT INTENSITY FROM TEST ZONE USING PHOTODETECTORS AND STORE SAMPLES
A
FORM AUTOCORRELATION FUNCTION OF STORED SAMPLES AND ACCUMULATE RESULTS
DATA COLLECTION COMPLETE ?
NO
YES
PERFORM FOURIER TRANSFORM ON CORRELATION FUNCTION
CONVERT FREQUENCY DISTRIBUTION TO VELOCITY/MOBILITY DISTRIBUTION
B
STORE RESULT AS (i)
go to Fig 9B

FIG 10B

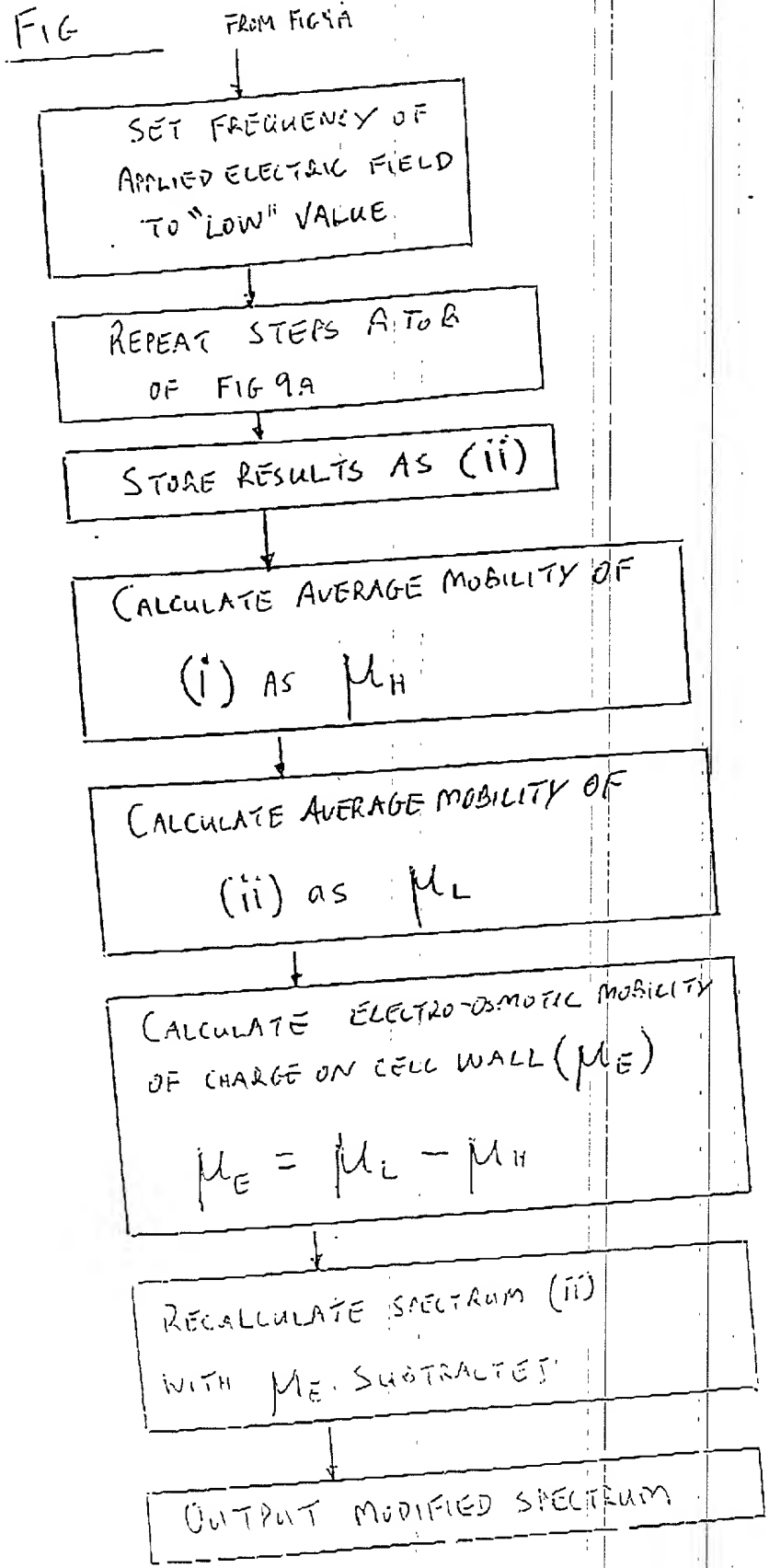

FROM FIG 9A
SET FREQUENCY OF APPLIED ELECTRIC FIELD TO "LOW" VALUE
REPEAT STEPS A TO B OF FIG 9A
STORE RESULTS AS (ii)
CALCULATE AVERAGE MOBILITY OF (i) AS μ_H
CALCULATE AVERAGE MOBILITY OF (ii) AS μ_L
CALCULATE ELECTRO-OSMOTIC MOBILITY OF CHARGE ON CELL WALL (μ_E)
$\mu_E = \mu_L - \mu_H$
RECALCULATE SPECTRUM (ii) WITH μ_E SUBTRACTED
OUTPUT MODIFIED SPECTRUM

FIG 11

EQUATIONS

a) MOBILITY μ = $\dfrac{\text{Velocity of Particle } (V)}{\text{electric field } (E)}$

b) $$\bar{\mu} = \frac{\int_{-\infty}^{+\infty} \mu f(\mu) d\mu}{\int_{-\infty}^{+\infty} f(\mu) d\mu}$$

where $f(\mu)$ = mobility spectra

c) electroosmotic mobility $\mu_E = \bar{\mu}_L - \bar{\mu}_H$

where μ_L = particle mobility at low frequency applied electric field.

and μ_H = particle mobility at high frequency applied electric field.

d) $$f'(\mu) = f_H(\mu + \mu_E)$$

where $f'(\mu)$ is the corrected form of the particle mobility distribution function

FIG 12A

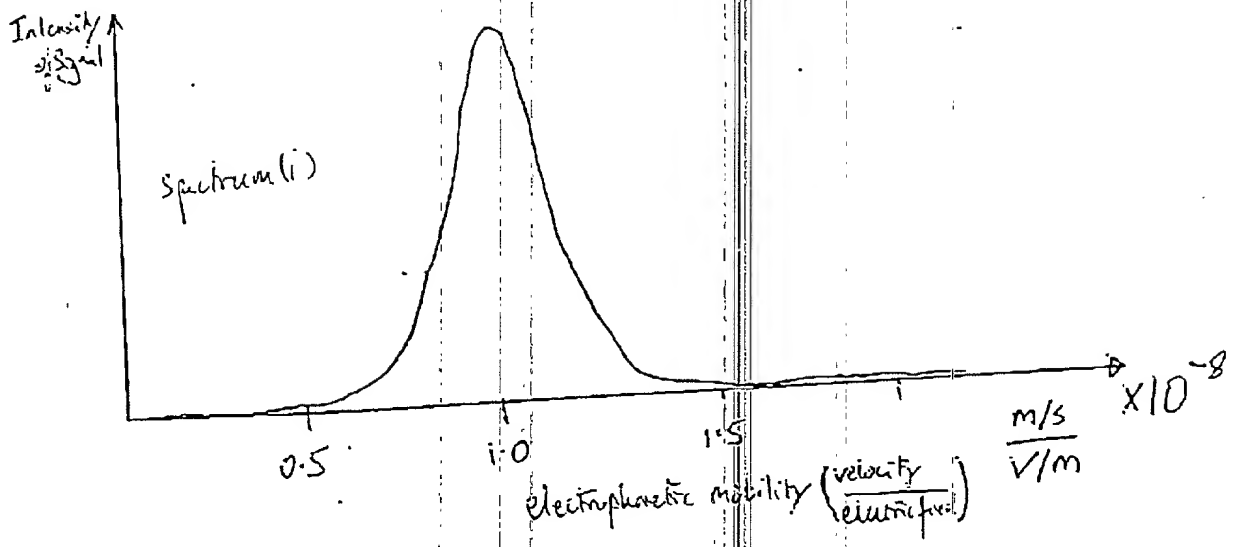
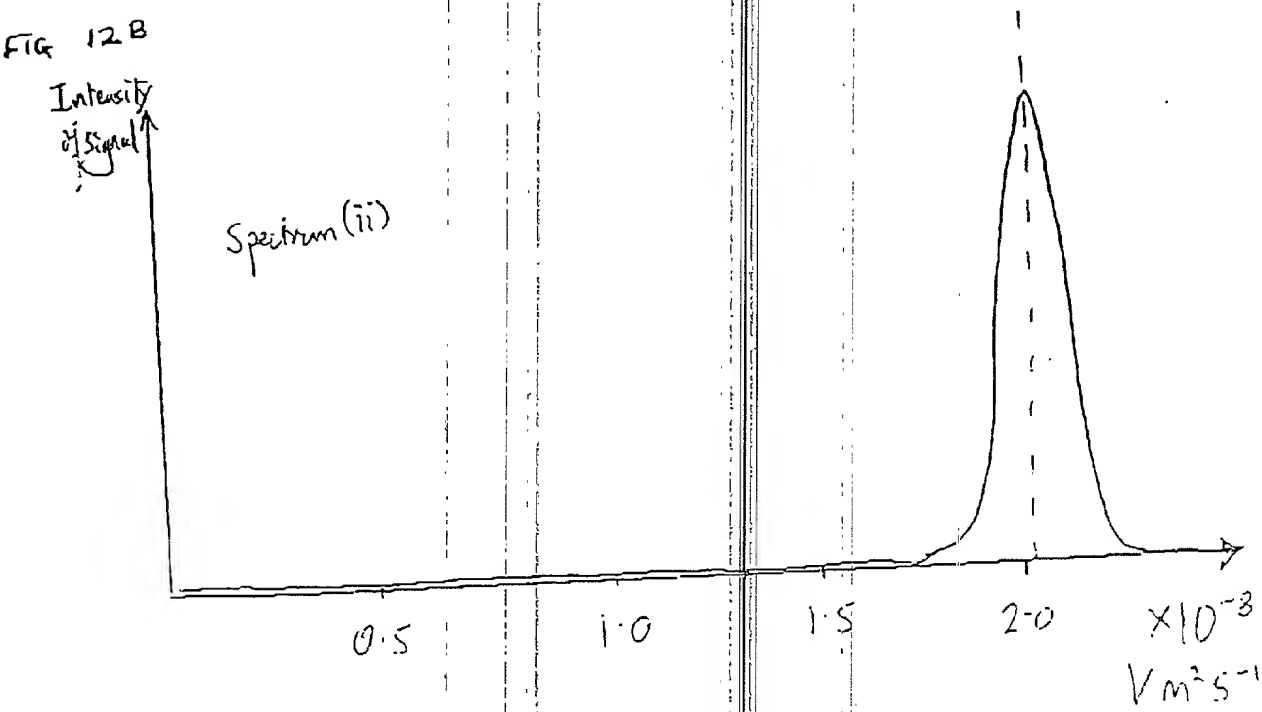


FIG 12B



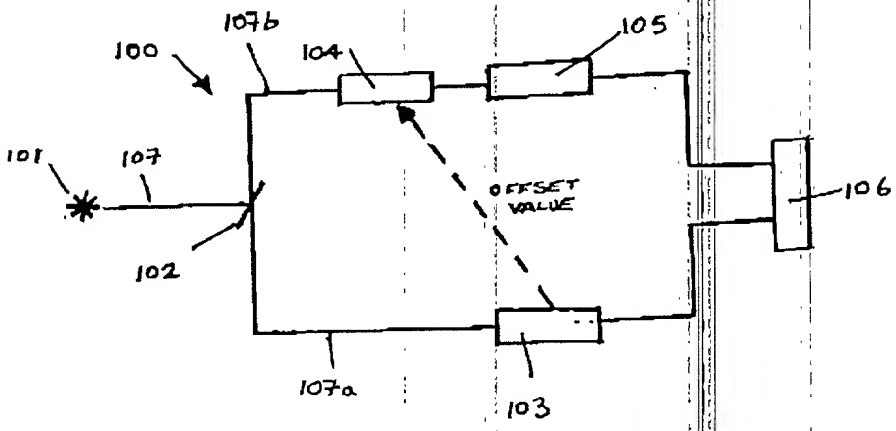


Figure 9

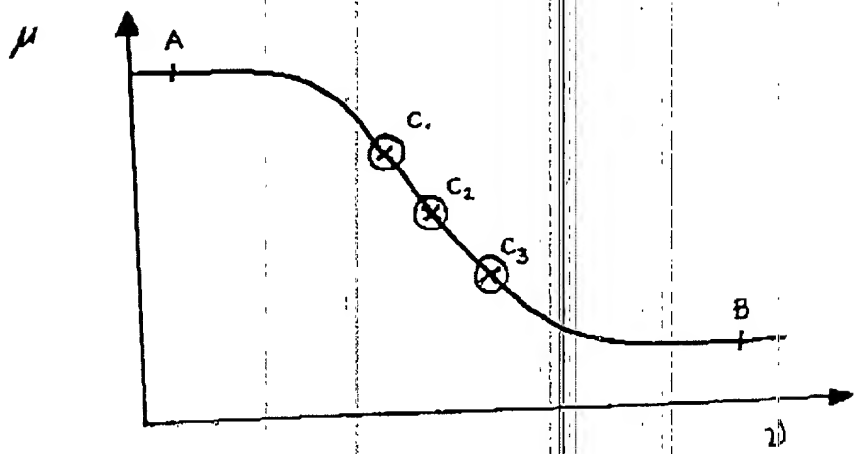


Figure 13

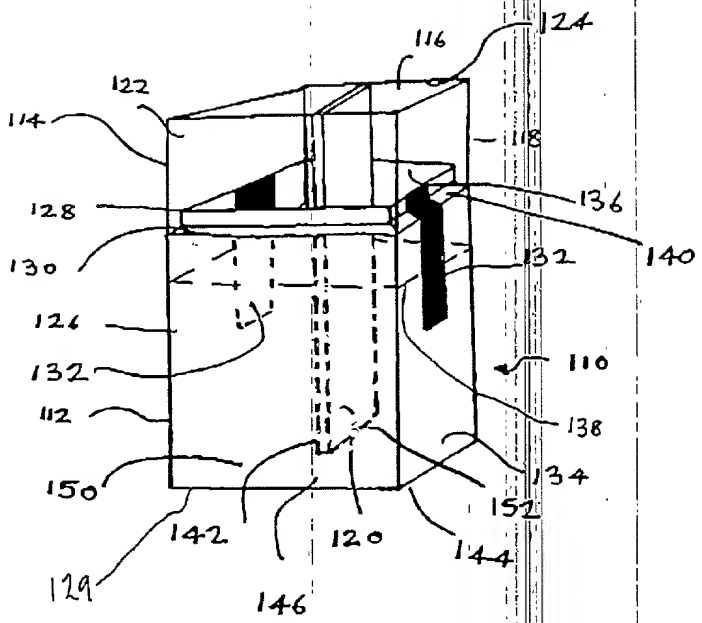


Figure 14

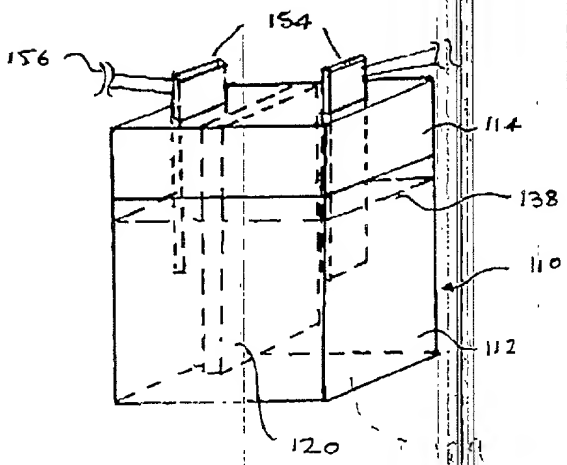


Figure 15

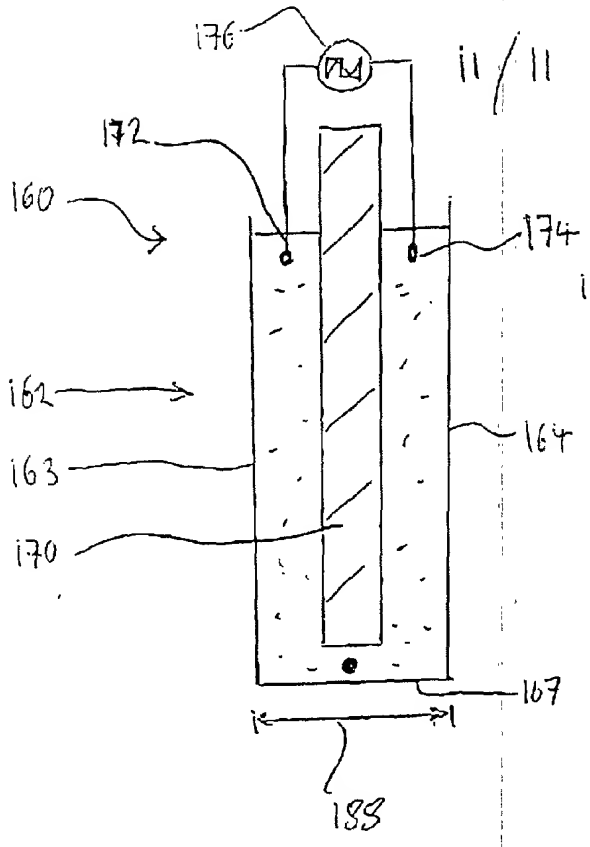


FIG. 16A

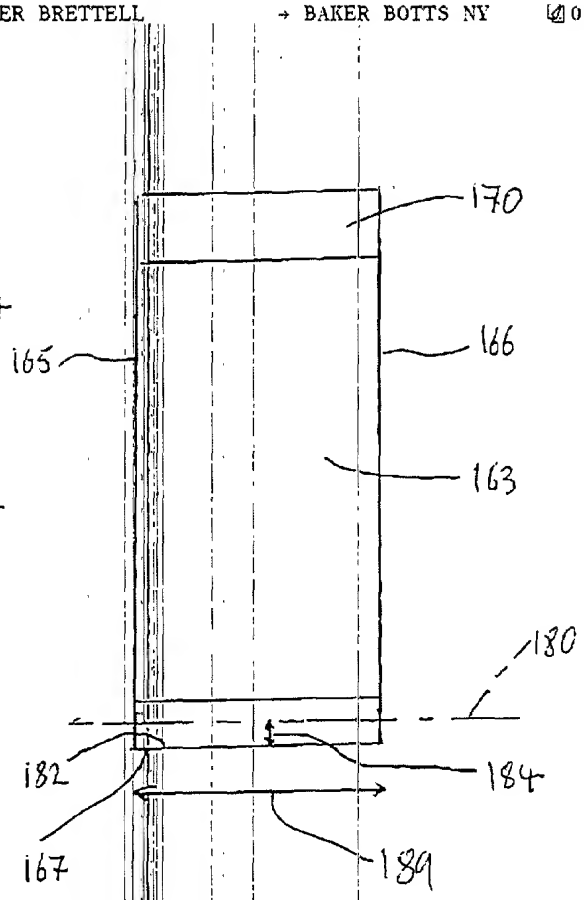


FIG. 16B